Historic, archived document

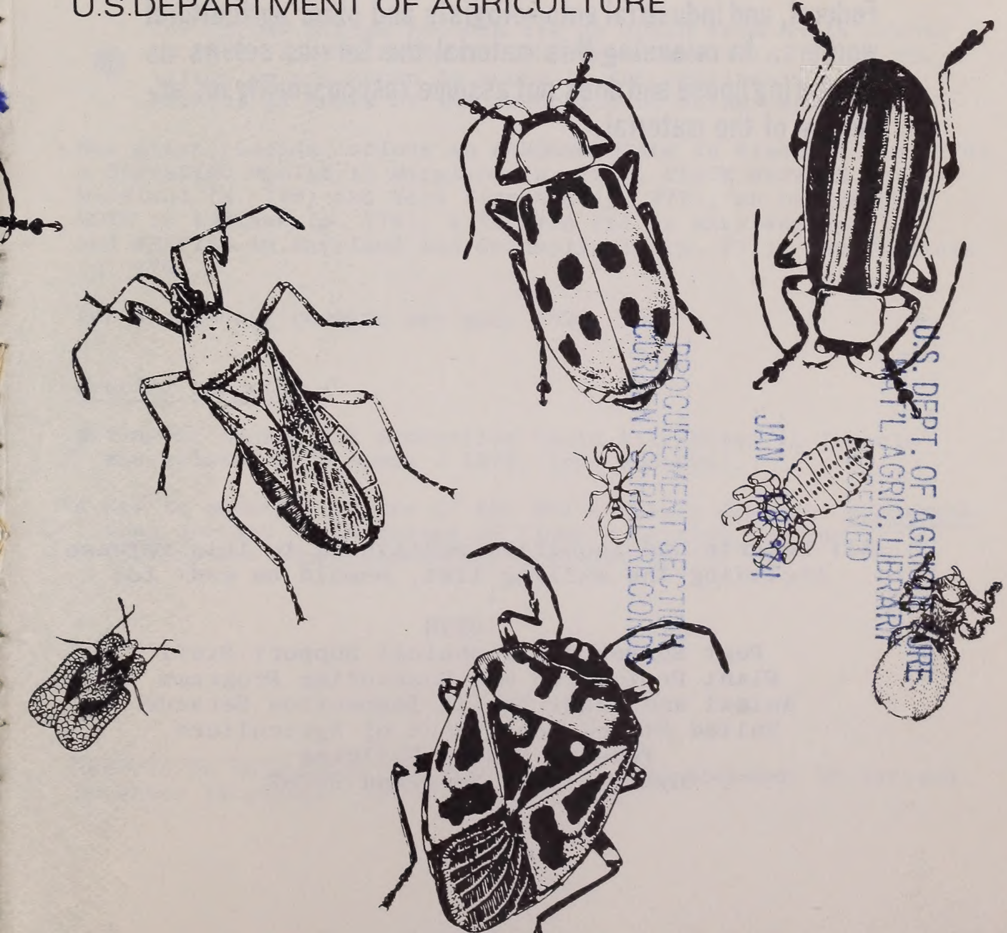
Do not assume content reflects current scientific knowledge, policies, or practices.

Reserve
1.9§7
A2C78

VOL. 23 NOS. 49-52 December 1973

Cooperative Economic Insect Report

Issued by
PLANT PROTECTION AND QUARANTINE PROGRAMS
ANIMAL AND PLANT HEALTH INSPECTION SERVICE
U.S.DEPARTMENT OF AGRICULTURE



PROCUREMENT SECTION
CURRENT SERIAL RECORDS

U.S. DEPT. OF AGRICULTURE
NAT'L AGRIC. LIBRARY
RECEIVED
JAN [illegible] 74

ANIMAL AND PLANT HEALTH INSPECTION SERVICE
PLANT PROTECTION AND QUARANTINE PROGRAMS
PEST SURVEY AND TECHNICAL SUPPORT STAFF

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Service serves as a clearing house and does not assume responsibility for accuracy of the material.

All reports and inquiries pertaining to this release, including the mailing list, should be sent to:

CEIR
Pest Survey and Technical Support Staff
Plant Protection and Quarantine Programs
Animal and Plant Health Inspection Service
United States Department of Agriculture
Federal Center Building
Hyattsville, Maryland 20782

Volume 23 December 28, 1973 Numbers 49-52

COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

GREENBUG heavy on small grains in areas of New Mexico, Texas, and Oklahoma; some controls applied in Texas and Kansas. (p. 775).

ALFALFA WEEVIL egg counts heavier in Oklahoma alfalfa than at same time in 1972; current increases noted in Missouri. (p. 776).

DOUGLAS FIR TUSSOCK MOTH expected to be economic in 1974 in OREGON and northweard. WHITEMARKED TUSSOCK MOTH may be unusually heavy in Indiana. (pp. 778, 779).

Detection

● New United States records are an APHID from South Dakota (p. 780) and an ENCYRTID WASP from Hawaii (p. 781). The latter is not known to occur in the continental U.S. Nothing is known of the economics of either species.

New State records include an ARMORED SCALE in Wisconsin (p. 778), a BUPRESTED BEETLE in Maryland (p. 780), CLICK BEETLES in Maryland (p. 779) and West Virginia (p. 777), an OLETHREUTID MOTH in Indiana (p. 778), a TACHINA FLY in Maryland (p. 781), and WEEVILS in Maryland and Pennsylvania (p. 777), and Virginia (p. 776).

For New County records see page 782.

Special Reports

Estimated Losses and Production Costs Attributed to Insects and Related Arthropods - 1972. (pp. 783-796).

A Key to Separate Larvae of the Whitefringed Beetles, Graphognathus Species, from Larvae of Closely Related Species (Coleoptera, Curculionidae). (pp. 797-800).

Reports in this issue are for weeks ending November 30 through December 14 unless otherwise indicated.

CONTENTS

Special Insects of Regional Significance........................775

Insects Affecting

Small Grains...............776
Forage Legumes.............776
Miscellaneous Field Crops..777
Cole Crops.................777
General Vegetables.........777
Small Fruits...............778
Ornamentals................778
Forest and Shade Trees.....778
Man and Animals............779
Miscellaneous Wild Plants..780

Beneficial Insects...781
Detection..782
Corrections..782
Estimated Losses and Production Costs Attributed to Insects and Related Arthropods - 1972......................................783
A Key to Separate Larvae of the Whitefringed Beetles, Graphognathus Species, from Larvae of Closely Related Species (Coleoptera, Curculionidae).........................797

NATIONAL WEATHER SERVICE'S 30-DAY OUTLOOK

MID-DECEMBER 1973 TO MID-JANUARY 1974

The National Weather Services 30-day outlook for mid-December to mid-January is for temperatures to average above seasonal normals across the Nation except for near normal in the upper Mississippi Valley and near to below normal in the Southeast. Precipitation is expected to exceed normal in the middle and south Atlantic Coast States and in the Northwest. Subnormal totals are indicated for the Southwest and also the Ohio Valley. Elsewhere near normal amounts are in prospect.

Weather forecast given here is based on the official 30-day "Resume and Outlook" published twice a month by the National Weather Service. You can subscribe through the Superintendent of Documents, Washington, D.C. 20250. Price $5.00 a year.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

GREENBUG (Schizaphis graminum) - NEW MEXICO - Very heavy on wheat in Union, Quay, and Curry Counties week ending November 30; did not respond to treatment. Stable at 4-6 per linear foot in several fields of wheat near Portales, Roosevelt County, week ending December 7. (N.M. Coop. Rpt.). TEXAS - Heavy, 600-800 per linear row foot in Dickens County small grains week ending November 30. Small grains killed in fields with these levels; many producers treated. Moderate to heavy, 50-150 per linear row foot, in Knox, Motley, and Stonewall Counties. Light to moderate, 20-50 per linear row foot, in fields in Hardeman, Jones, Cottle, Wilbarger, Foard, Fisher, and Wichita. S. graminum active in some south-central area small grains; decreased in Callahan, Tom Green, and Coleman Counties. Light to moderate on small grains in Rolling Plains, San Angelo, and Uvalde areas week ending December 7. Ranged 20-55 per linear row foot in Wilbarger County, up to 75 in isolated fields. In Archer County, ranged 5-25 per linear row foot. S. graminum heavy in parts of Knox County, many producers treated. Light to heavy on small grains in Motley County, heaviest on wheat and barley. Moderate on oats and triticales, light on rye. Light to moderate in Cottle and Young Counties. Small grains in San Angelo area showed severe damage in areas of soil moisture stress. S. graminum also noted in wheat in Medina County. (Boring et al.).

ARKANSAS - S. graminum was light, only occasional specimen taken in northwest area wheat week ending December 14. Some parasitized aphids observed. Survey negative in area previous 2 weeks. (Boyer). OKLAHOMA - Ranged light to moderate in most wheat checked in Roger Mills, Beckham, Custer, Caddo, and Washita Counties week ending November 30, up to 600 in spots in some Washita County fields. Moderate in McCurtain County, 0-20 per linear foot in Comanche County. During week ending December 8, counts per linear foot in wheat ranged 20-150 in Cotton County, 0-30 in Comanche County, and 10-15 in Texas County. (Okla. Coop. Sur.).

KANSAS - Some treatments for S. graminum were made in Kearny County wheat week ending November 23, ranged up to 400 per row foot. Increased in some Wichita County fields, up to 300 per drill row foot noted in field of large wheat, little damage noticeable. Ranged up to 100 per row foot in 6-inch wheat in Scott County. Continued periods of unseasonably warm weather in southwest district caused outbreaks in wheat in Stanton and Morton Counties week ending December 14. Much treatment made when daytime temperatures permitted. Averages per drill row foot in 4 fields per county of 4 to 5-inch wheat ranged as follows: Morton 20-600, Stanton 50-600, Seward 0-6, Stevens trace to 4, Hamilton trace to 30, Greeley 15-30. Check of field surveyed 14 days ago in Wichita County showed no increase, possibly due to cooler weather. Infestations of wheat 1-9 inches tall in Crawford, Bourbon, Neosho, Allen, Cherokee, and Montgomery Counties usually none to light, none economic. (Bell).

SPOTTED ALFALFA APHID (Therioaphis maculata) - FLORIDA - About 3,500 nymphs and adults taken in 100 sweeps of alfalfa at Gainesville, Alachua County, December 5. (Fla. Coop. Sur.). NEW MEXICO - Ranged 12-20 per square foot on new alfalfa near Carlsbad, Eddy County, week ending December 14. (N.M. Coop. Rpt.). CALIFORNIA - Developed in some Imperial County alfalfa week ending December 7, treatments applied. Much of problem solved with resistant alfalfa varieties. Therioaphis maculata has developed resistance to organophosphates. (Cal. Coop. Rpt.).

SMALL GRAINS

WINTER GRAIN MITE (Penthaleus major) - TEXAS - Increased infestations noted in small grains in Young and Jones Counties November 19-30. No excessive damage noted. Ranged light to moderate in small grains in eastern Wilbarger County, observed in Wichita County week ending December 7. Light, 9-12 per linear row foot, in Baylor, Archer, and Young Counties. (Boring).

AN APHID (Rhopalosiphum padi) - OKLAHOMA - Light to moderate in wheat in several west-central counties week ending November 30. (Okla. Coop. Sur.). KANSAS - Ranged from trace up to 200 per drill row foot in 4 to 5-inch wheat in western areas first half of December. Usually none, but occasionally trace infestations present in wheat 9 inches tall in southeast district. (Bell).

TURF, PASTURES, RANGELAND

A SOD FLY (Inopus rubriceps) - CALIFORNIA - Adults collected September 27, 1973, in Alameda County by A. Kaplan. Determined by C. Koehler, verified by M. Wasbauer. This is a new county record. Indicates fly is spreading out of San Francisco peninsula where it has been known since 1948. (Cal. Coop. Rpt.).

FORAGE LEGUMES

ALFALFA WEEVIL (Hypera postica) - OKLAHOMA - In samples collected November 30, egg counts averaged 150 and 198 per square foot in alfalfa in Garvin County and 228 and 476 in Stephens County, compared with 21 per square foot on this date in 1972 in Stephens County. Samples collected December 1 in Payne County averaged 226 eggs per square foot compared with 6 on this date in 1972. Larvae ranged 2-3 per square foot in these samples. (Okla. Coop. Sur.). KANSAS - Adults and first to third-instar larvae averaged 30 and 16, respectively, per 100 sweeps in 7-inch Wabaunsee County alfalfa week ending November 30. Adults averaged 76 per 100 sweeps in 7-inch Pottawatomie County alfalfa; no larvae observed. (Bell).

ARKANSAS - Adults light, 20-30 per 100 sweeps, in Washington County week ending November 30. No H. postica larvae taken. Survey negative in northwest area following week. (Boyer). MISSOURI - Eggs increased in 5 counties sampled in southern areas week ending December 8. November counts (eggs per square foot) and increases from October as follows by county: Cedar 6 to 9; Dallas zero to 53; Howell zero to 55.5; Lawrence zero to 47.5; Miller zero to 1.5; and Wright zero to 18. (Munson). KENTUCKY - Eggs averaged 5.2 per square foot in Fayette County alfalfa week ending December 7. (Barnett, Parr).

A WEEVIL (Stenopelmus rufinasus) - VIRGINIA - Collected in blacklight trap in Independent City of Norfolk August 29, 1973, by A. Cathon. Determined by R.E. Warner. This is a new State record. (Ford).

PEA APHID (Acyrthosiphon pisum) - NEW MEXICO - Ranged 30-60 per square foot on alfalfa near Carlsbad, Eddy County, week ending December 14. (N.M. Coop. Rpt.). OKLAHOMA - Ranged 100-150 per 10 sweeps in alfalfa checked in Wagoner and Muskogee Counties week ending December 8. (Okla. Coop. Sur.). ARKANSAS - Increased in Washington County alfalfa week ending November 30; ranged 400-500 per 100 sweeps. About 30 percent of specimens parasitized. A. pisum populations in northwest area legumes declined due to cold weather. Less than 100 per 100 sweeps taken in alfalfa week ending December 14. (Boyer). KANSAS - Averaged 1,000 and 1,400 per 100 sweeps in 7-inch alfalfa in Wabaunsee and Pottawatomie Counties, respectively, week ending November 30. (Bell). FLORIDA - Approximately 5,450 nymphs and adults taken in 100 sweeps of alfalfa at Gainesville, Alachua County, December 5. (Fla. Coop. Sur.).

MISCELLANEOUS FIELD CROPS

A WEEVIL (Cylindrocopturus adspersus) - MARYLAND - Found in stems of Helianthus annus (common sunflower) during August and September from 1962 through 1973 by E.J. Ford, Jr., and C.E. Miller. PENNSYLVANIA - Taken in blacklight trap at Philadelphia September 6, 1973, by D. Zechmeister. Determinations by R.E. Warner. These are new State records. C. adspersus is common west of Mississippi River. (Ford).

A CLICK BEETLE (Agriotes pubescens) - WEST VIRGINIA - Taken at large on Short Mountain near Kirby, Hampshire County, July 2, 1967. Collected and determined by E.J. Ford, Jr. This is a new State record and a southern extension of range of this elaterid. (Ford).

COLE CROPS

A SAP BEETLE (Conotelus mexicanus) - CALIFORNIA - Occurred again this fall in large numbers north of Tehachapi Mountains. While populations not as heavy as in 1972, they were still much in evidence. In Fresno County, commercial Chinese cabbage plants infested. Biology of pest worked out this season. Larvae breed in cotton blossoms without damaging cotton but populations build up to very heavy. (Cal. Coop. Rpt.). See CEIR 22(43):728 for special report. (PPQ).

CUCURBITS

PICKLEWORM (Diaphania nitidalis) - FLORIDA - Moderately heavy on squash at Sanford, Seminole County, December 4. Several commercial farms affected. (Fla. Coop. Sur.).

GENERAL VEGETABLES

A LEAFMINER FLY (Liriomyza sp.) - FLORIDA - Caused very serious damage to celery over most of Everglades celery-growing region centered near Belle Glade, Palm Beach County, during period November 15-29. Some leaves almost white due to heavy mining; some mines observed on celery petioles. No treatments thus far effective. Infestations mainly in commercial fields; also present in celery seedbeds. (Fla. Coop. Sur.).

SMALL FRUITS

AN ARMORED SCALE (*Rhizaspidiotus dearnessi*) - WISCONSIN - Infestation of general nature, with vines killed, noted on cranberry beds near Valley Junction, Monroe County, during August 1973 by C. Koval. Determined by D.R. Miller. Counts ranged 30-40 scale insects per vine, with damage to area of about 80 acres. Fact that vines were killed by such heavy infestation indicated pest firmly established. This is a new State record. (Conrad).

A CUTWORM (*Orthodes crenulata*) - MICHIGAN - Moderate on grape (fruit ripening) in commercial vineyard at Keeler, Van Buren County. Larvae collected September 24, 1973, by J. Patter. Determined by D.M. Weisman. This is a new county record. (Sauer).

ORNAMENTALS

AN OLETHREUTID MOTH (*Eucosma sonomana*) - INDIANA - Adults, reared from larvae collected from Scotch pines near Bristol, Elkhart County, June 18, 1973, by T. Ballard, determined by D.R. Davis. This is a new State record. (Schuder).

A TORTRICID MOTH (*Platynota rostrana*) - ALABAMA - Larvae observed leaf rolling and stem feeding on 5-10 percent of several hundred potted gloxinia in commercial greenhouse at Columbia, Houston County, October 31, 1973. Collected by M.H. Roney. Determined by D.M. Weisman. This is a new county record. (McQueen).

A COREID BUG (*Alydus eurinus*) - WEST VIRGINIA - Adults heavy on hemlocks in 2.5-acre block at Glen, Clay County, November 2, 1973. Collected by G. Gibson. Determined by A.E. Cole. This is a new county record. (Hacker).

AN ARMORED SCALE (*Lepidosaphes yanagicola*) - TENNESSEE - Infested stock blocks and young plants of *Euonymus atatus* var. *compacta* in Franklin County week ending December 14. Treatments planned. (Cagle).

A SOFT SCALE (*Pulvinaria mesembryanthemi*) - CALIFORNIA - Nymphs and adults infested *Mesembryanthemum* (ice plant) ground cover at Napa, Napa County, week ending November 30. Scale increasing range and has unlimited host material as ice plant widely used on freeway plantings. (Cal. Coop. Rpt.).

GREENHOUSE WHITEFLY (*Trialeurodes vaporariorum*) - NEW MEXICO - This species, along with spider mites (*Tetranychus* spp.), heavy on poinsettas, fuschia, verbena, croton, palm, and seedling *Euonymus* in commercial greenhouses and retail outlets in Rio Arriba and Bernalillo Counties week ending December 14. (N.M. Coop. Rpt.).

FOREST AND SHADE TREES

DOUGLAS FIR TUSSOCK MOTH (*Hemerocampa pseudotsugata*) - OREGON - Egg mass surveys completed week ending December 14. Infestations expected to be economic in 1974 barring natural controls. Possible infested acreage, including area north of State line, estimated at about 600,000. About 121,000 acres of private timberlands expected to need treatment in 1974. (Larson).

SOUTHERN PINE BEETLE (*Dendroctonus frontalis*) - ALABAMA - Late population outbreak of *this species, D. terebrans* (black turpentine beetle), and *Ips* spp. moved from 6-8 *pines (40 to* 50 feet tall) on two adjoining *lawns* to 46 others. Mixed species occur with *D. frontalis* and *Ips* spp. dominant. Trees turned brown, efforts to *cut and treat underway*. Removal estimated at $1,000.00. (Strother et al.).

WHITEMARKED TUSSOCK MOTH (*Hemerocampa leucostigma*) - INDIANA - Survey of overwintering egg masses indicates unusually heavy potential populations. Some Marion County Siberian elms noted with 100+ masses per tree. Silver maples in Lafayette area of Tippecanoe County observed with 20+ per tree. (Chandler).

FALL CANKERWORM (*Alsophila pometeria*) - INDIANA - Adult emergence heavy during last 14 days of November. Egg masses heavier than previously noted, especially on silver maple in Lafayette region of Tippecanoe County. (Chandler).

LINDEN LOOPER (*Erannis tiliaria*) - WEST VIRGINIA - Seven male adults taken in blacklight trap in Dolly Sods area of Grant County November 14, 1973. Collected by P. Van Buskirk. Determined by A.R. Miller. This is a new county record. (Hacker).

A CLICK BEETLE (*Agriotes collaris*) - MARYLAND - On flowers of *Acer spicatum* (mountain maple) at 3,360 feet altitude on Mount Backbone in Garrett County June 7, 1969. Collected and determined by E.J. Ford, Jr. This is a new State record and a southern extension of range of this elaterid. (Ford).

MAN AND ANIMALS

SCREWWORM (*Cochliomyia hominivorax*) - Total of 2,415 confirmed cases reported from continental U.S. during period November 11-December 8 as follows: Texas 2,127; New Mexico 14; Arizona 145; California 29. Total of 994 confirmed from Mexico. Number of sterile flies released this period totaled 563,206,200 as follows: Texas 429,457,200; New Mexico 945,000; Arizona 127,062,000; California 5,742,000. Total of 135,660,600 sterile flies released in Mexico. (Anim. Health).

HORN FLY (*Haematobia irritans*) - FLORIDA - Averaged 160 per beef animal at Gainesville, Alachua County, December 6. Populations heavier than usual for time of year. (Fla. Coop. Sur.). MISSISSIPPI - Decreased on Oktibbeha County beef cattle during week ending November 30, averaged less than 30 per animal. None observed on cattle week ending December 7. (Robinson). TEXAS - Moderate on cattle in Schleicher, Mason, and Menard Counties week ending November 30. (McWhorter, Green). OKLAHOMA - Still active on cattle in southern counties week ending November 30. Moderate in Comanche and McCurtain Counties and light in Choctaw County. (Okla. Coop. Sur.).

FACE FLY (*Musca autumnalis*) - NORTH CAROLINA - Survey to determine distribution conducted during period July 18 to September 6; periodic sampling in conjunction with other duties also included. From Sampson to Graham Counties, 49 herds examined. Sweep collections taken from fresh manure when flies observed on cattle in counties not known to be infested. Collections positive in Person, Durham, Randolph, Stanly, Montgomery, Moore, Alamance, and Davidson Counties. Determined by D.L. Stephan. Randolph, Stanly, Montgomery, Moore, Alamance, and Davidson are new county records. Infestations generally heavier in mountains and western Piedmont. (Hunt).

COMMON CATTLE GRUB (Hypoderma lineatum) - FLORIDA - None observed or collected in backs of 75 head of untreated dairy cattle at Gainesville, Alachua County, November 29. Some specimens usually apparent this time of year. (Fla. Coop. Sur.). OKLAHOMA - Moderate on cattle in Pawnee County week ending November 30. Ranged 4-16 per head in Comanche County. During week ending December 8, H. lineatum ranged 0-24 (average 12) per head on yearlings and 0-20 (average 6) on old cows checked in Payne County. (Okla. Coop. Sur.)

HOG LOUSE (Haematopinus suis) - MISSISSIPPI - Averaged 25 per 6-inch square area behind ear of two boars and 10 per 6-inch square on 6 sows in Oktibbeha County week ending November 30. (Robinson).

SHORTNOSED CATTLE LOUSE (Haematopinus eurysternus) - TEXAS - This species and Linognathus vituli (longnosed cattle louse) increased on cattle and sheep in Edwards Plateau and Hill County area near San Angelo week ending November 30. (McWhorter).

A LOUSEFLY (Hippobosca longipennis) - CALIFORNIA - Eradication treatment underway week ending December 7. No infestation plaguing cheetahs at San Diego Wild Animal Park, San Pasquel, San Diego County. Regular chemical dusting of loafing areas and one treatment of entire compound in effect. Two aerial treatments of compound planned in spring. No flies noted in one month. Two litters of kittens have been born. No ill effects from chemical treatments noted, treatments have not interfered with reproduction. Flea problem also reduced. (Cal. Coop. Rpt.).

MOSQUITOES - CALIFORNIA - Again a problem due to wet weather and fairly warm days. Hibernating mosquitoes activated and biting with many complaints from residents in cities week ending December 7. Hibernating species noted in garages, pump houses, open porches, and in protected areas of yards. Predicted cool to cold weather will lessen situation. Swimming pools one of main sources at present; much standing water and containers in yards allow continued breeding. (Cal. Coop. Rpt.).

LONE STAR TICK (Amblyomma americanum) - TEXAS - This species and Dermacentor albipictus (winter tick) increased on cattle throughout most San Angelo area counties week ending November 30. (McWhorter).

MISCELLANEOUS WILD PLANTS

AN APHID (Dactynotus cirsii) - SOUTH DAKOTA - Collected on Canada thistle (Cirsium arvense) in northern Moody County, 11 miles south of Brookings, Brookings County, June 18, 1973. Collected by L. Nearman. Determined by L.M. Russell. This is a new United States record. (Jones).

A BUPRESTID BEETLE (Agrilus concinnus) - MARYLAND - Taken in blacklight trap at Shelltown, Somerset County, July 13, 1965. Collected and determined by E.J. Ford, Jr. Verified by G.B. Vogt. This is a new State record and a northern extension of known range of this species. The host of this uncommon buprestid is unknown. (Ford).

BENEFICIAL INSECTS

LADY BEETLES - NEW MEXICO - Lady beetles, mainly Hypoderma convergens (convergent lady beetle), noted at one adult per square foot in alfalfa fields near Carlsbad, Eddy County, week ending December 14. (N.M. Coop. Rpt.). KANSAS - H. convergens adults averaged 6 per 100 sweeps in 7-inch Pottawatomie County alfalfa week ending November 30. (Bell). MISSISSIPPI - Coleomegilla maculata adults congregated at base of trees surrounding cotton and soybean fields in Washington County week ending December 7. Beetles in diapause and hundreds taken from single tree. (Nichols).

DAMSEL BUGS (Nabis spp.) - KANSAS - Adults averaged 28 and 44 per 100 sweeps in 7-inch alfalfa in Wabaunsee and Pottawatomie Counties, respectively, week ending November 30. (Bell). OKLAHOMA - Moderate in aphid infested wheat fields in west-central counties week ending November 30. (Okla. Coop. Sur.).

A TACHINA FLY (Minthozelia ruficauda) - MARYLAND - Parasitic in unspecified cerambycid larvae boring in dead Acer rubrum (red maple) at Beltsville, Prince Georges County. Cerambycid larvae collected April 17, 1973, by E.J. Ford, Jr. M. ruficauda determined by C.W. Sabrosky. This is a new State record. (Ford).

AN ENCYRTID WASP (Anabrolepis bifasciatus Ishii) - HAWAII - Several specimens emerged from Duplaspidiotus claviger (an armored scale) that infested ohia twigs collected at Keawia Heiau State Park, Aiea, Oahu, by J.W. Beardsley June 23, 1973. This is a new United States record, but this encyrtid wasp is not known to occur in continental United States. A. bifasciatus was described from Japan and is known also from India. J.W. Beardsley determined the host scale and the encyrtid wasp. (Beardsley).

AN EULOPHID WASP (Euplectrus plathypenae) - OKLAHOMA - Reared from the Spodoptera ornithogalli (yellowstriped armyworm) collected on peanuts near Marlow, Stephens County, August 15, 1973, and S. ornithogalli (fall armyworm) collected on peanuts at Ft. Cobb, Caddo County, September 7, 1973. Larvae collected by R. Wall. Parasites determined by B.D. Burks. (Okla. Coop. Sur.).

ALFALFA WEEVIL PARASITES - NORTH CAROLINA - Surveys conducted during April 1973 in 2 Rowan and 2 Haywood County alfalfa fields revealed established populations of Bathyplectes curculionis (an ichneumon wasp) and Tetrastichus incertus (a eulophid wasp) in both counties. Of 3,000 Hypera postica (alfalfa weevil) larvae examined from Rowan County fields, 15.8 percent parasitized by B. curculionis, an increase over 1972. T. incertus present in H. postica population but less than one percent recovery made. Both parasitic wasps released in Rowan County during 1971, but none released in Haywood County. However, 1.3 percent of H. postica larvae collected in Haywood County parasitized by B. curculionis and less than one percent paratized by T. incertus. These may be migrants from release site in Tennessee. These are first recoveries in both counties. (Hunt).

DETECTION

New United States Records - AN APHID (*Dactynotus cirsii*) - SOUTH DAKOTA - Moody County. (p. 780). AN ENCYRTID WASP (*Anabrolepis bifasciatus* Ishii) - HAWAII - Oahu. (p. 781).

New State Records - AN ARMORED SCALE (*Rhizaspidiotus dearnessi*) - WISCONSIN - Monroe County. (p. 778). A BUPRESTID BEETLE (*Agrilus concinnus*) - MARYLAND - Sommerset County. (p. 780). CLICK BEETLES *Agriotes collaris* - MARYLAND - Garret County. (p. 779). *A. pubescens* - WEST VIRGINIA - Hampshire County. (p. 777). AN OLETHREUTID MOTH (*Eucosma sonomana*) - INDIANA - Elkhart County. (p. 778). A TACHINA FLY (*Minthozelia ruficauda*) - MARYLAND - Prince Georges County. (p. 781). WEEVILS - *Cylindrocopturus adspersus* - MARYLAND. (p. 777). PENNSYLVANIA - Philadelphia County. (p. 777). *Stenopelmus rufinasus* - VIRGINIA - Independent City of Norfolk. (p. 776).

New County Records - A COREID BUG (*Alydus eurinus*) WEST VIRGINIA - Clay (p. 778). A CUTWORM (*Orthodes crenulata*) MICHIGAN - Van Buren (p. 778). FACE FLY (*Musca autumnalis*) NORTH CAROLINA - Randolph, Stanly, Montgomery, Moore, Alamance, Davidson (pp. 779-780). LINDEN LOOPER (*Erranis tiliaria*) WEST VIRGINIA - Grant (p. 779). A SOD FLY (*Inopus rubriceps*) CALIFORNIA - Alameda (p. 776). A TORTRICID MOTH (*Platynota rostrana*) ALABAMA - Houston (p. 778).

CORRECTIONS

CEIR 23(35):597 - A SAP BEETLE (Conotellus mexicanus) - should read (Conotelus mexicanus).

CEIR 23(45-48):762 - New County Records - Trimerotropis latisfasciatus should read Trimerotropis latifasciatus. A LADY BEETLE (Lindorus lophanthae) ... should read (p. 759).

COOPERATIVE ECONOMIC INSECT REPORT

ESTIMATED LOSSES AND PRODUCTION COSTS ATTRIBUTED TO INSECTS AND RELATED ARTHROPODS - 1972

Introduction

Prior to 1966, insect loss estimates were published in the Cooperative Economic Insect Report as individual reports. An attempt has been made for the eighth year to condense loss estimates from various States into a single report. This gives a more meaningful and better overall picture of the crop losses. The data has been compiled from the crop loss estimates submitted from 12 States. The entomologists submitting the 1972 estimates are listed below.

H. F. McQueen	Alabama
W. P. Boyer	Arkansas
F. W. Mead	Florida
K. F. Kawamura	Hawaii
K. O. Bell	Kansas
D. E. Barnett	Kentucky
J. R. Sandve	Minnesota
E. A. Dickason	Nebraska
W. J. Colberg	North Dakota
D. C. Peters	Oklahoma
R. G. Walstrom	South Dakota
J. M. Grayson	Virginia

Legend for pest abbreviations appears at end of loss tables.

Separates of this report are available from the Pest Survey and Technical Support Staff.

U.S. Dept. Agr.
Coop. Econ. Ins. Rpt.
23(49-52):783-796, 1973

Crop State	Pest Complex	Total Acres Produced (1000)	Loss Per Acre (Units)	Yield Loss Loss Per Acre (Dollars)	Non-treated Acres (1000)	Sub-total ($1000)	Control Cost Cost Per Acre (Dollars)	Treated Acres (1000)	Sub-total ($1000)	Total Loss ($1000)
ALFALFA (Hay)			Tons							
Arkansas	AlW	64,000	0.58	20.30	15,000	304,500	2.50	45,000	112,500	417,000
Kansas	ACw, PWC	1,170,000	0.31	8.24	2,000	16,480	2.25	2,100	4,725	21,195
	AlW	"	0.25	6.83	95,800	654,314	2.50	49,200	123,000	780,177
	FA	"	0.15	4.13	6,500	26,845	2.50	2,000	5,000	31,852
	PA	"	0.12	3.29	59,000	194,346	2.50	10,000	25,000	219,346
	SAA	"	0.15	4.13	17,100	70,623	3.00	3,250	9,750	80,390
	Wbw	"	0.12	3.29	6,400	21,082	2.50	300	750	21,831
North Dakota	Gh, PA, Alw PB, Wbw	1,492,000	0.15	2.78	60,000	166,800	2.50	40,000	100,000	266,800
Oklahoma	AlW, SAA, PA	595,000	1.20	48.80	185,640	9,059,232	4.87	290,360	1,414,053	10,473,285
South Dakota	Gh, PA, AlW FB, Cr	2,382,000	0.59	11.03	347,772	3,835,925	2.75	128,628	353,727	4,189,652
Virginia	AlW, Slb, PA	80,000	-	1.08	4,000	432,000	7.50	44,000	330,000	599,200a
					Subtotal	14,782,147			2,478,505	17,100,728
ALFALFA (Seed)										
Nebraska	W, BB, Wbw, C, PB, L, Gh, A, Cws	27,000	5.20	1.92	28,000	5,376	3.00	3,200	9,600	14,976
					Subtotal	5,376			9,600	14,976
APPLES			Lbs							
Arkansas	CdM, M, RAA, PC, LR	1,	-	-	-	-	55.00	1,600	88,000	128,000a
Minnesota	AM, CdM, M LR	3,000	-	-	-	-	150.00	3,000	450,000	450,000
Virginia	CdM, M, A AM	440,000,000	-	-	-	-	0.0048	-	-	2,112,000
					Subtotal				538,000	2,690,000

a Quality loss included in total.

Crop State	Pest Complex	Total Acres Produced (1000)	Loss Per Acre (Units)	Yield Loss Loss Per Acre (Dollars)	Non-treated Acres (1000)	Sub-total ($1000)	Control Cost Cost Per Acre (Dollars)	Treated Acres (1000)	Sub-total ($1000)	Total Loss ($1000)
BARLEY			Bu.							
North Dakota	Ww, T, Gh, A, AL	2,617,000	3.60	3.20	20,000	64,000	2.50	40,000	100,000	164,000
					Subtotal	64,000			100,000	164,000
CATTLE (Beef)			Cwt.							
Alabama	HoF, Li, CaG, SF, Hf, HrF, TF, FF, Ti, Mo, Bf	1,228,000	84	26.42	2,156,000	7,926,000	3.00	928,000	2,784,000	10,710,000
Arkansas	CaL	1,912,000	-	-	-	-	0.10	490,000	49,000	49,000
	HoF, LST	"	-	18.50	992,000	18,352,000	0.75	920,000	690,000	19,042,000
	Mo	"	-	18.50	449,000	8,306,500	-	-	-	8,306,500
Oklahoma	HoF, CCG	2,187,000	100	43.90	1,957,228	85,922,308	1.94	3,193,372	6,195,142	92,117,451
				Subtotal		120,506,809			9,718,142	130,224,951
CATTLE (Dairy)										
Arkansas	Hf	96,000	4.38	30.62	38,400	1,175,808	4.00	57,600	230,400	1,406,208
			Lbs. milk							
Oklahoma	HoF, CCG, HrF, SF, Scw, Li, Ti	1,235,000,000	18.2	113.02	16,796	1,898,284	2.97	112,404	333,840	2,232,124
					Subtotal	3,074,092			564,240	3,638,332
CATTLE (Beef Calves)										
Alabama	HoF, Li, CaG, SF, Hf, HrF, TF, FF, Ti, Mo, Bf	963,000	90	34.07	200,000	6,814,000	3.00	763,000	2,289,000	15,103,000
					Subtotal	6,814,000			2,289,000	15,103,000

				Yield Loss			Control Cost			
Crop State	Pest Complex	Total Acres Produced (1000)	Loss Per Acre (Units)	Loss Per Acre (Dollars)	Non-treated Acres (1000)	Sub-total ($1000)	Cost Per Acre (Dollars)	Treated Acres (1000)	Sub-total ($1000)	Total Loss ($1000)
CORN (Grain)			Bu.							
Alabama	SwCB, CLA, CEW, FA, ECB, MB, StB, SCsb, CB	560,000	4.4	6.12	530,000	3,243,600	1.50	30,000	45,000	4,981,000
Kansas	CB	1,250,000	5.2	7.23	11,800	85,290	3.00	3,000	9,000	94,290
	CEW	"	0.76	1.06	-	-	2.70	17,000	45,000	63,920
	CR(larvae)	"	16.64	23.13	65,000	2,073,324	3.00	820,000	2,460,000	4,533,325
	CR(adults)	"	4.16	5.78	34,000	196,601	2.80	91,000	254,800	451,401
	Cws	"	5.20	7.23	16,400	118,539	2.00	2,100	4,200	122,739
	CLA	"	-	-	28,000	-	2.80	28,000	78,400	78,400
	ECB	"	-	-	16,600	-	2.20	16,600	36,520	36,520
	Gh	"	5.20	7.23	3,400	24,582	2.50	6,100	15,250	39,832
	SwCB	"	5.20	7.23	4,000	28,912	2.20	3,400	7,480	36,392
	SpM	"	-	-	-	-	3.50	127,000	444,500	444,500
Kentucky	ECB	1,226,000	12.2	17.69	87,046	1,539,843	4.25	122,600	521,050	2,060,893
Minnesota	ECB others	4,899,000	1.4	1.96	-	-	3.00	20,000	60,000	9,966,198
Nebraska	CR, ECB, CEW, SCB, Cws, Gh, Ww, M, CLA, SB, Aws, FA, WBC, WG	5,170,000	15.6	19.96	-	-	3.50	-	-	38,933,150
North Dakota	CR, Ww, CLA Gh	159,000	2.00	2.30	30,000	6,900,000	2.50	15,000	3,750,000	106,500
South Dakota	ECB, CR, Gh, Ww, Cws	2,388,000	16.00	18.56	407,154	7,556,778	6.00	906,246	5,437,476	12,994,254
Virginia	Aws, Cws, JB, CEW	502,000	62.25	84.66	10,000	846,600	4.40	90,000	396,000	1,242,600
					Subtotal	22,614,069			13,520,576	71,204,914

Crop State	Pest Complex	Total Acres Produced (1000)	Loss Per Acre (Units)	Yield Loss			Control Cost			Total Loss ($1000)
				Loss Per Acre (Dollars)	Non-treated Acres (1000)	Sub-total ($1000)	Cost Per Acre (Dollars)	Treated Acres (1000)	Sub-total ($1000)	
			Tons							
CORN (Silage)										
North Dakota	ECB, CR, CLA, Gh	282,000	.42	2.94	60,000	176,400	2.50	10,000	25,000	201,400
Virginia	Aws, Cws, JB, CEW	183,000	10.50	115.50	3,700	427,350	4.40	32,900	144,760	572,110
					Subtotal	603,750			169,760	773,510
CORN (Sweet)			Cwt.							
Alabama	CEW, StB, FA, CB, CLA	3,900	-	-	-	-	30.00	3,900	117,000	117,000
Hawaii	CEW, SpM, CP	225	0.10	1.4	-	-	32.67	225	7,351	13,997
Minnesota	CEW, CR, ECB	117,000	-	-	-	-	10.00	241,000	2,410,000	2,410,000
					Subtotal				2,534,351	2,540,997
COTTON			Lbs.							
Alabama	BW, Blw, TB, T, TPB, CA, SpM, BwWf	580,000	94.4	25.54	140,000	3,575,600	12.00	440,000	5,280,000	6,721,000
Arkansas	BW, Blw, PB, M	1,410,000	50	14.65	70,500	103,282,500	9.50	1,156,500	10,986,750	12,299,575
Oklahoma	BW, Blw, F, T	510,000	138	29.67	270,300	801,980,100	10.90	167,586	1,826,687	4,874,211
					Subtotal	908,838,200			18,093,437	23,894,786
CUCUMBERS										
Hawaii	LMF, MF, SpM, GhWF, MA	160	1,567	266.39	-	-	152.11	160	24,338	69,960
					Subtotal				24,338	69,960
FIELD BEANS			Cwt.							
Nebraska	WBC, MBB, Gh, BLB, L, A	88,000	1.85	17.20	12,000	206,400	3.50	28,000	98,000	206,400
					Subtotal	206,400			98,000	206,400

				Yield Loss			Control Cost			
Crop State	Pest Complex	Total Acres Produced (1000)	Loss Per Acre (Units)	Loss Per Acre (Dollars)	Non-treated Acres (1000)	Sub-total ($1000)	Cost Per Acre (Dollars)	Treated Acres (1000)	Sub-total ($1000)	Total Loss ($1000)
FLAX			Bu.							
South Dakota	Gh	360,000	1.25	3.04	2,700	8,208	2.65	-	-	8,208
					Subtotal	8,208				8,208
FOREST										
Alabama	ETC, BTB, SPB, SPS, RhPS, NPTM, FTC	21,700,000	-	-	-	-	-	-	-	5,400,000
					Subtotal					5,400,000
HAY			Tons							
Minnesota	Gh, PA, L	3,020,000	.13	2.61	90,000	234,900	2.50	2,000	5,000	239,900
Nebraska	Gh, GW, Cws, SAA, PB, PA, CoA, L, CLW, Ac, Wbw, CR. Aws	4,150,000	.10	2.35	285,000	669,750	3.00	35,000	105,000	774,750
					Subtotal				110,000	1,014,650
HENS AND PULLETS			Head							
Arkansas	Hf	16,000,000	-	-	-	-	0.0036	12,800,000	46,080	46,080
					Subtotal				46,080	46,080
HOGS			Lbs.							
Alabama	Hf, HL, M	1,722,000	18	4.95	100,000	495,000	1.35	1,622,000	2,189,700	2,684,700
Arkansas	HL	388,000	1.44	1.44	161,000	231,840	.10	39,000	3,900	235,740
					Subtotal	726,840			2,193,600	2,920,440

Crop State	Pest Complex	Total Acres Produced (1000)	Loss Per Acre (Units)	Yield Loss			Control Cost			Total Loss ($1000)
				Loss Per Acre (Dollars)	Non-treated Acres (1000)	Sub-total ($1000)	Cost Per Acre (Dollars)	Treated Acres (1000)	Sub-total ($1000)	
			Bu.							
OATS										
North Dakota	Gh, Ww, A	2,107,000	4.6	2.53	20,000	50,600	2.50	20,000	50,000	100,600
Nebraska	Ww, EGA, WG, CB, L, Aws, Cws, Gh	402,000	2.45	1.71	11,000	18,810	2.75	4,000	11,000	29,810
South Dakota	Gh	2,038,000	4.90	3.08	20,000	61,600	2.75	-	-	61,600
					Subtotal	131,010			61,000	192,010
ONIONS (Green)										
Hawaii	BA, LMF, Ot	75	2,342	679.18	-	-	48.48	75	3,636	54,574
					Subtotal				3,636	54,574
ORANGES			Lbs.							
Hawaii	OFF, Sc, BM Nak	60	3,141	282.69	-	-	72.07	60	4,324	21,287
					Subtotal				4,324	21,287
PASSION FRUIT										
Hawaii	T, BM, SpM, BSc, Mb	160	1,420	85.20	-	-	59.18	160	947	14,579
					Subtotal				947	14,579
PASTURES										
Kansas	Gh	20,339,000	-	-	322,000	-	2.50	28,000	70,000	70,000
					Subtotal				70,000	70,000

ScB, Cws, Gh,

Crop State	Pest Complex	Total Acres Produced (1000)	Loss Per Acre (Units)	Yield Loss			Control Cost			Total Loss ($1000)
				Loss Per Acre (Dollars)	Non-treated Acres (1000)	Sub-total ($1000)	Cost Per Acre (Dollars)	Treated Acres (1000)	Sub-total ($1000)	
PEANUTS			Lbs.							
Alabama	LCB, T, SCR, Cws, WfB, SpM, L, RPw, FA, Aws, BA	197,000	563	81.64	47,000	383,708,000	5.50	150,000	825,000	4,648,000
Oklahoma	LCB, CEW, RPw, T	119,000	226	31.64	33,237	1,051,619	7.52	34,593	260,139	1,311,758
Virginia	SCR, PL, T	101,000	384	57.60	1,000	57,600	12.50	100,000	1,250,000	1,317,600
					Subtotal	384,817,219			2,335,139	7,277,358
PEACHES										
Alabama	PC, PTB, LPTB, SJS, WPS, TSM, OFM	650,000	-	-	-	-	.30	650,000	195,000	195,000
Arkansas	OFM, TPB, PC, Sc, PTB	3,500	-	-	-	-	42.00	3,500	147,000	479,000a
					Subtotal				342,000	674,500
PECANS										
Alabama	HS, A, PeW, PNC, StB, SpM, PLC, P, Sc	925,000	7.77	345.76	600,000	207,456,000	9.00	150,000	1,350,000	210,306,000
					Subtotal				1,350,000	210,306,000
POPCORN										
Nebraska	CR, ECB, CEW, ScB, Cws, M, Gh, Ww, CLA, SCM, AWS, SB	21,000	260	7.28	3,000	21,840	3.00	12,000	36,000	57,840
					Subtotal				36,000	57,840

Crop State	Pest Complex	Total Acres Produced (1000)	Yield Loss				Control Cost			
			Loss Per Acre (Units)	Loss Per Acre (Dollars)	Non-treated Acres (1000)	Sub-total ($1000)	Cost Per Acre (Dollars)	Treated Acres (1000)	Sub-total ($1000)	Total Loss ($1000)
			Cwt.							
POTATOES										
Alabama	Ww, A, PFB, CPB	17,000	-	-	-	-	7.00	17,000	119,000	119,000
Minnesota	L, FB, CPB, A, Ww, Cws	82,600	15.8	39.18	2,600	101,868	10.00	80,000	800,000	901,868
Nebraska	CPB, L, PB, BB, PP, FB, Ww, Gh	7,600	17.19	29.22	500	14,610	7.00	4,500	31,500	46,110
North Dakota	L, FB, CPB, Ww	120,000	4.4	9.90	10,000	99,000	6.20	50,000	310,000	409,000
					Subtotal	215,478			1,260,500	1,475,978
RANGE										
South Dakota	Gh	26,000,000	.21	3.93	234,000	91,962	2.50	2,600	6,500	98,462
					Subtotal				6,500	98,462
RICE (Foliage treatment)										
Arkansas	RSB, Gh	441,000	-	-	-	-	2.00	14,000	28,000	28,000
					Subtotal				28,000	28,000
RICE (Seed treatment)										
South Dakota	Gh	26,000,000	.21	3.93	234,000	91,962	2.50	2,600	6,500	98,462
					Subtotal				6,500	98,462
RYE			Bu.							
North Dakota	Gh, AL	142,000	3.6	2.74	9,000	24,600	2.50	1,000	2,500	27,160
South Dakota	Gb	290,000	16.5	15.18	40,600	616,308	2.75	17,400	47,850	646,236
					Subtotal	640,908			50,350	673,396
SNAP BEANS			Lbs.							
Alabama	MBB, BLB, CEW, SpM, LCB, T, SCR	1,400	-	-	-	-	15.00	1,400	21,000	21,000
Hawaii	LMF, CSpM, GHWf, BF, BM, CRB	80	1,604	625.56	-	-	297.19	80	23,775	73,820
					Subtotal				44,775	94,820

Crop State	Pest Complex	Total Acres Produced (1000)	Loss Per Acre (Units)	Yield Loss Loss Per Acre (Dollars)	Non-treated Acres (1000)	Sub-total ($1000)	Control Cost Cost Per Acre (Dollars)	Treated Acres (1000)	Sub-total ($1000)	Total Loss ($1000)
			Bu.							
SORGHUM (Grain)										
Arkansas	SM, CEW, SWw	157,000	7.6	8.89	5,000	44,450	2.25	10,000	22,500	66,950
Kansas	CB	3,520,000	2.69	3.36	58,000	194,735	2.50	20,000	50,000	244,735
Nebraska	CLA, Cws, Gh, Ww, PB, RA, CB, SCM, ScB, Gb	1,757,000	7.2	9.00	*	-	3.00	808,200	2,424,600	
Oklahoma	Gb, FA, CEW, SM, BGM	630,000	6.5	8.97	139,230	1,248,893	3.87	24,570	95,086	1,343,979
South Dakota	Gb, Ww	259,000	24	28.32	46,620	1,320,278	2.75	186,480	512,820	1,833,098
					Subtotal	2,808,356			3,105,006	3,488,762
SOYBEANS										
Alabama	TB, VbC, CL, StB, BLB, CEW, LCB, MBB, SL, GCw, WfB	733,000	2.1	7.33	50,000	336,500	4.50	250,000	1,125,000	1,491,500
Kansas	CEW	875,000	2.24	7.62	10,000	76,160	-	-	-	76,160
Minnesota	BLB, GCw, Gh	3,325,000	-	-	-	-	2.00	22,000	44,000	44,000
Nebraska	BLB, Grb, MBB, Wbw, GCw, Gh, CR, Cws	746,000	1.32	4.48	29,000	129,920	3.00	11,000	33,000	162,920

* Excess acreage treated, formula not applicable.

Crop State	Pest Complex	Total Acres Produced (1000)	Loss Per Acre (Units)	Yield Loss			Control Cost			
				Loss Per Acre (Dollars)	Non-treated Acres (1000)	Sub-total ($1000)	Cost Per Acre (Dollars)	Treated Acres (1000)	Sub-total ($1000)	Total Loss ($1000)
SOYBEANS (Cont.)			Bu.							
North Dakota	Gh, CR	190,000	2.10	7.14	20,000	142,800	2.50	40,000	100,000	242,000
South Dakota	Gh	253,000	1.45	5.55	1,012	5,616	2.75	-	-	5,616
Virginia	MBB, CEW, StB	350,000	5.75	20.41	*	102,050b	4.40	105,000	462,000	589,050a
					Subtotal	793,036			1,764,000	2,615,046
SUGARBEETS			Tons							
Minnesota	Wbw, Cws, Ww	111,700	-	-	-	-	5.00	35,000	175,000	220,000c
Nebraska	Wbw, L, Gh, Ww, FB, SpM	77,600	1.38	21.39	7,000	149,730	3.75	6,000	22,500	172,230
North Dakota	RM, Cws, Ww, Gh, Wbw	74,000	0.8	12.80	5,000	64,000	7.25	25,000	181,250	245,250
					Subtotal	213,730			378,750	637,480
SUGARCANE										
Hawaii	NGSW	108,500	0.36	65.66	6,300	413,658	-	-	-	413,658
					Subtotal	413,658				413,658
SUNFLOWERS			Lbs.							
North Dakota	Gh, Cws, SfB, SM, SfM, SuM, W	407,000	46	2.16	5,000	10,800	2.50	40,000	100,000	110,800
					Subtotal	10,800			100,000	110,800

* Does not compute as acres treated greater than those needing treatment
b Estimates
c 5,000 acres repeanted of $9.00 per acre.

Crop State	Pest Complex	Total Acres Produced (1000)	Yield Loss Loss Per Acre (Units)	Yield Loss Loss Per Acre (Dollars)	Yield Loss Non-treated Acres (1000)	Sub-total ($1000)	Control Cost Cost Per Acre (Dollars)	Control Cost Treated Acres (1000)	Sub-total ($1000)	Total Loss ($1000)
SWEET PEPPERS			Lbs.							
Hawaii	PW, GPA, CEW, BM	55	-	-	-	-	131.70	55	7,243	82,549
					Subtotal				7,243	82,549
SWEETPOTATOES										
Alabama	Ww, FB, SpW, WG, WfB,	4,800	-	-	-	-	8.00	4,800	38,400	38,400
					Subtotal				38,400	38,400
TOBACCO - Shade grown Type 62										
Florida	TB, CL, GPA, TFB, Ww	2,400	36	97	- d	-	42.00	2,400	100,800	333,000
					Subtotal				100,800	333,000
TOBACCO - Flue-cured Type 14										
Florida	TB, CL, Cws, FB, TbH, Ww,	10,600	220	168	-	-	21.00	10,600	222,600	2,173,000
					Subtotal				222,600	2,173,000
TOMATOES										
Alabama	TFw, FB, A, CL, LMF, SpM, TPw, WfB, L	8,700	-	-	-	-	46.00	8,700	400,200	400,200
Hawaii	TPw, LMF, GhWf, CSpM, MF, TFw	140	2,560	589	-	-	244.14	140	34,179	116,611
					Subtotal				434,379	516,811

d All acreage treated regardless of need.

Crop State	Pest Complex	Total Acres Produced (1000)	Loss Per Acre (Units)	Yield Loss Loss Per Acre (Dollars)	Non-treated Acres (1000)	Sub-total ($1000)	Control Cost Cost Per Acre (Dollars)	Treated Acres (1000)	Sub-total ($1000)	Total Loss ($1000)
			Lbs.							
TURKEY										
Alabama	Hf, DB, M, Li	28,000	-	-	-	-	.05	28,000	1,400	1,400
					Subtotal				1,400	1,400
WATERMELONS										
Hawaii	LMF, CSpM, MF, GhWf	175	1,860	223	-	-	193.40	175	33,845	72,905
					Subtotal				33,845	72,905
WHEAT (Grain)			Bu.							
Kansas	Aws	9,400,000	2.01	3.38	1,250	4,221	2.50	2,000	5,000	9,221
	ACW, PWC	"	4.02	6.75	3,700	24,988	2.20	1,900	4,180	29,168
	Gb	"	2.01	3.38	94,200	318,094	2.00	11,800	23,600	341,694
	Gh	"	-	-	-	-	2.00	14,900	29,800	29,800
	HF	"	0.06034	0.00568	-	-	-	-	-	889,512
Nebraska	BWM, WG, WSM, Cws, HF, Gb, Gh, Ww, EGA, CB, WCM, Aws	2,556,000	2.96	4.64	28,000	129,920	2.75	62,000	170,500	300,420
Oklahoma	Gb, BWM, WGM	3,900,000	5	8.45	492,000	4,152,330	2.36	327,600	773,136	4,925,466
				Subtotal		4,152,330			1,052,216	6,525,281
WHEAT (HRS)										
North Dakota	WSSF	5,143,000	.87	1.48	1,998,000	1,998,000	-	150,000	-	1,998,000
					Subtotal	1,998,000				1,998,000
WHEAT (Spring & Durum)										
South Dakota	Gb, WSM, HF, Gh	1,173,000	4.9	10.19	21,114	215,152	2.75	119,646	329,026	544,178
					Subtotal	215,152			329,026	544,178
WHEAT (Fall)										
North Dakota	A, AL, WSM, Ww, Gh	7,507,000	1.7	2.89	500,000	1,445,000	2.50	300,000	750,000	2,195,000
					Subtotal	1,445,000			750,000	2,195,000

LEGEND

A - Aphids
AC - Alfalfa Caterpillar
ACw - Army Cutworm
AL - Aster Leafhopper
AlW - Alfalfa Weevil
AM - Apple Maggot
Aws - Armyworms
BA - Beet Armyworm
BB - Blister Beetles
BF - Bean Fly
Bf - Blackflies
BGM - Banks Grass Mite
BLB - Bean Leaf Beetle
Blw - Bollworm
BM - Broad Mite
BSc - Barnacle Scale
BTB - Black Turpentine Beetle
BW - Boll Weevil
BWM - Brown Wheat Mite
BwWf - Bandedwinged Whitefly
C - Chalcids
CA - Cotton Aphid
CaG - Cattle Grubs
CaL - Cattle Lice
CB - Chinch Bugs
CCG - Common Cattle Grub
CdM - Codling Moth
CEW - Corn Earworm
CL - Cabbage Looper
CLA - Corn Leaf Aphid
CLW - Clover Leaf Weevil
CoA - Clover Aphid
CP - Corn Planthopper
CPB - Colorado Potato Beetle
Cr - Crickets
CR - Corn Rootworms
CRB - Chinese Rose Beetle
CSpM - Carmine Spider Mite
Cws - Cutworms
DB - Darkling Beetles
DsB - Dusky Sap Beetle
ECB - European Corn Borer
EGA - English Grain Aphid
ETC - Eastern Tent Caterpillar
F - Fleahoppers
FA - Fall Armyworm
FB - Flea Beetles
FF - Face Fly
FTC - Forest Tent Caterpillar
Gb - Greenbug
GCw - Green Cloverworm
Gh - Grasshoppers

GhWf - Greenhouse Whitefly
GPA - Green Peach Aphid
Grb - Grubs
GW - Garden Webworm
HF - Hessian Fly
Hf - House Fly
HL - Hog Louse
HoF - Horn Fly
HrF - Horse Fly
HS - Hickory Shuckworm
JB - Japanese Beetle
L - Leafhoppers
LCB - Lesser Cornstalk Borer
Li - Lice
LMF - Leafminer Flies
LPTB - Lesser Peach Tree Borer
LR - Leafrollers
LST - Lone Star Tick
M - Mites
MA - Melon Aphid
Mb - Mealybug
MB - Maize Billbug
MBB - Mexican Bean Beetle
MF - Melon Fly
Mo - Mosquitoes
NaK - Narrowwinged Katydid
NGSW - New Guinea Sugarcane Weevil
NPTM - Nantucket Pine Tip Moth
OT - Onion Thrips
OFF - Oriental Fruit Fly
OFM - Oriental Fruit Moth
P - Phylloxeras
PA - Pea Aphid
PB - Plant Bugs
PBw - Pink Bollworm
PC - Plum Curculio
PeW - Pecan Weevil
PFB - Potato Flea Beetle
PL - Potato Leafhopper
PLC - Pecan Leaf Casebearer
PNC - Pecan Nut Casebearer
PP - Potato Psyllid
PTB - Peach Tree Borer
PW - Pepper Weevil
PWC - Pale Western Cutworm
RA - Root Aphids
RAA - Rosy Apple Aphid
RFM - Red Flat Mite
RhPS - Redheaded Pine Sawfly
RM - Root Maggots
RPw - Rednecked Peanutworm
RW - Root Weevils

RWW - Rice Water Weevil
RSB - Rice Stink Bug
S - Slugs
SAA - Spotted Alfalfa Aphid
SB - Stalk Borer
Sc - Scales
ScB - Seedcorn Beetle
SCM - Seedcorn Maggot
SCR - Southern Corn Rootworm
SCsB - Southern Cornstalk Borer
Scw - Screwworm
SF - Stable Fly
SfB - Sunflower Beetle
SfM - Sunflower Moth
SJS - San Jose Scale
SL - Soybean Looper
Slb - Spittlebugs
SM - Sorghum Midge
SMC - Saltmarsh Caterpillar
SPB - Southern Pine Beetle
SpM - Spider Mites
SPS - Southern Pine Sawyer
SpW - Sweetpotato Weevil
StB - Stink Bugs
SuM - Sunflower Moth
SwCB - Southwestern Corn Borer
SWw - Sorghum Webworm
T - Thrips
TB - Tobacco Budworm
Tb - Tomato Bugs
TbH - Tobacco Hornworm
TF - Tabanid Flies
TFB - Tobacco Flea Beetle
TFw - Tomato Fruitworm
TH - Tomato Hornworm
Ti - Ticks
TPB - Tarnished Plant Bug
TPw - Tomato Pinworm
TSM - Tumid Spider Mite
VbC - Velvetbean Caterpillar
W - Weevils
WBC - Western Bean Cutworm
Wbw - Webworms
WCM - Wheat Curl Mite
WfB - Whitefringed Beetles
WG - White Grubs
WGM - Winter Grain Mite
WPS - White Peach Scale
WSM - Wheat Stem Maggot
WSSF - Wheat Stem Sawfly
Ww - Wireworms

A Key to Separate Larvae of the Whitefringed Beetles, Graphognathus Species, from Larvae of Closely Related Species (Coleoptera, Curculionidae)

D.M. Anderson [1] and W.H. Anderson [2]

The following key and illustrations were published by W.H. Anderson in 1938 (USDA Bureau of Entomology and Plant Quarantine Mimeograph No. E-422) as an aid to the separation of the larvae of the whitefringed beetles (then called Naupactus leucoloma Boheman and Naupactus n. sp.) from those of 2 species closely related to them and likely to be found feeding on the roots of a wide variety of plants in the same situations with them. Because the key is still very useful for that purpose and has not required any major modifications, we are reissuing it and the illustrations here, with the scientific names and terminology updated, and with some minor changes in the title, in the wording of the text, and in the numbering of the figures.

The key was originally based on unreared larvae from areas where adults occurred, except for some reared larvae of Pantomorus cervinus (Boheman), but we have now checked it for accuracy against reared specimens of all of the species included in it. As before, the key is intended for identification of older (post first-instar) larvae.

Often the characteristic structures will be seen better after treatment with caustic potash. In all cases it will be necessary to dissect the larvae. Mature or nearly mature larvae can usually be adequately seen unmounted through a stereoscopic microscope at under 100 magnifications. Small larvae may have to be slide-mounted and viewed at greater magnifications through a compound microscope.

---

[1] Systematic Entomology Laboratory, ARS, USDA, Washington, D.C.
Mail address: c/o U.S. National Museum, Washington, D.C.
20560

[2] Research Collaborator, ARS, USDA.
Mail address: Route 2, Snow Hill, Maryland 21863

1. Maxilla with a group of several spinules dorsally on stipes at proximal end of the longitudinal row of strong setae of mala (Fig. 8, SPN)..2

   Maxilla without spinules at proximal end of the longitudinal row of strong setae of mala (Fig. 7)....Pantomorus cervinus (Boheman)

2. Eusternum of mesothorax (Fig. 9, STN) with minute spinules 3/ between and behind the two sternal setae (STNS); postdorsal setae (Fig. 1, PDS) I, II, and IV on first four abdominal segments (IAB, etc.) slender and subulate (= awl-shaped) (Fig. 2)........................Pantomorus taeniatulus (Berg)

   Eusternum of mesothorax (Fig. 10, STN) without minute spinules 3/; postdorsal setae I, II, IV on first four abdominal segments stout and fusiform (= spindle-shaped) (Fig. 3)..3

3. Margin of posterior third of head capsule broadly arched (Fig. 4A); paired epipharyngeal sclerome distinctly U-shaped (Fig. 5), anterior margin of basal part (Bs) forming a distinct angle with exterior margin of inner arm (IAM), and with inner arm about twice as long as antero-posterior extent of basal part....Graphognathus peregrinus (Buchanan)

   Margin of posterior third of head capsul ogival (Fig. 4B); paired epipharyngeal sclerome not distinctly U-shaped (Fig. 6), exterior margin of inner arm (IAM) roundly connected with interior margin of outer arm (OAM) and with inner arm not longer than antero-posterior extent of basal part.... Graphognathus spp. (leucoloma complex and minor Buchanan)

See following two pages for Figures and Explanation

3/ The presence or absence of these spinules can be ascertained readily on specimens treated with caustic potash and on uncleared specimens when properly lighted, by studying them with a magnification of about 75 diameters.

Explanation of Figures

Fig. 1. *Graphognathus* sp., mature larva (length 12 mm.), lateral view; IAB - first abdominal segment; VAB- fifth abdominal segment; PDS- postdorsal setae, numbered on following segment; Sp- spiracle.

Fig. 2. *Pantomorus taeniatulus*, postdorsal setae I, II, and IV and spiracle, from second abdominal segment.

Fig. 3. *Graphognathus* sp., postdorsal setae I, II, and IV and spiracle, from second abdominal segment.

Fig. 4A. *Graphognathus peregrinus*, head capsule, ventral view.

Fig. 4B. *Graphognathus* sp., head capsule, ventral view.

Fig. 5. *Graphognathus peregrinus*, epipharynx; Bs- basal part of Schlerome; IAM- inner arm of sclerome.

Fig. 6. *Graphognathus* sp., epipharynx; IAM- inner arm of sclerome; OAM- outer arm of sclerome.

Fig. 7. *Pantomorus cervinus*, right maxilla, dorsal view.

Fig. 8. *Graphognathus* sp., right maxilla, dorsal view; SPN- spinules.

Fig. 9. *Pantomorus taeniatulus*, mesothoracic (2TH), metathoracic (3TH), and first abdominal (IAB) segments, ventral view; STNS- sternal seta; STN- eusternum.

Fig. 10. *Graphognathus* sp., mesothoracic (2TH), metathoracic (3TH), and first abdominal (IAB) segments, ventral view; STN- eusternum.

U.S. Dept. Agr.
Coop. Econ. Ins. Rpt.
23(49-52):797-800, 1973

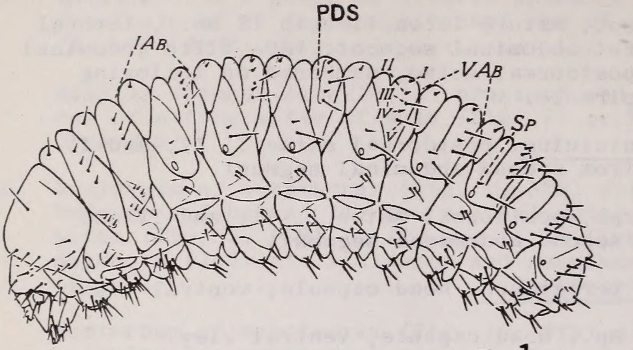


FIG 1
Graphognathus sp.

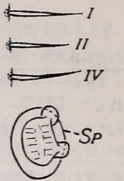


FIG 2
P. taeniatulus

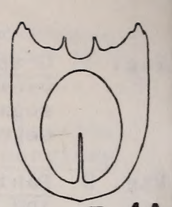


FIG 4A
G. peregrinus

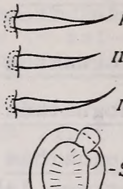


FIG 3

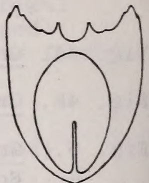


FIG 4B

Graphognathus sp.

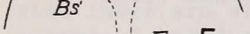


FIG 5
G. peregrinus

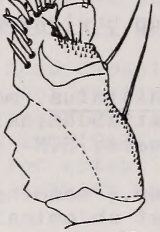


FIG 7
P. cervinus

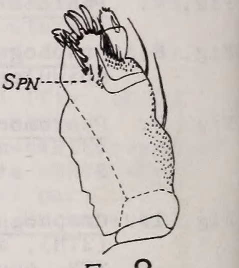


FIG 8
Graphognathus sp.

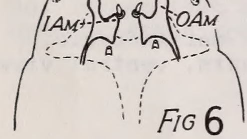
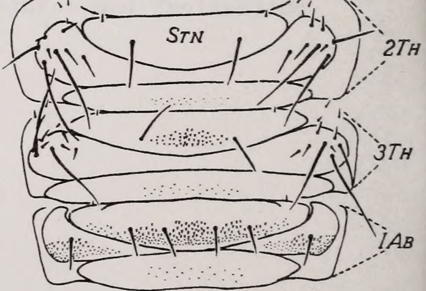


FIG 6

Graphognathus sp.



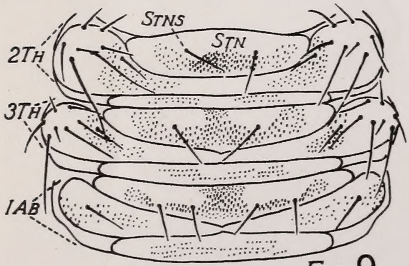


FIG 9
P. taeniatulus

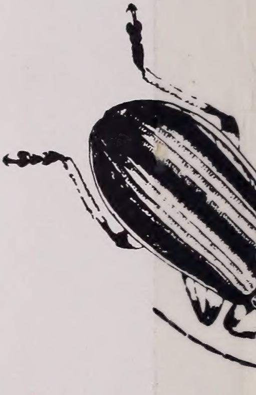
FIG 10
Graphognathus sp.

U.S. DEPARTMENT OF AGRICULTURE
HYATTSVILLE, MARYLAND 20782

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, $300

POSTAGE AND FEES PAID
U.S. DEPARTMENT OF
AGRICULTURE
AGR 101

U.S.MAIL



2297